

Amendment Under 37 C.F.R. § 1.116  
Appln. No. 09/750,125

**REMARKS**

Claims 1-10 and 13-16 are all the claims pending in the application. Claim 12 is cancelled.

Review and reconsideration on the merits are respectfully requested.

*Claim Rejections - 35 U.S.C. § 103*

Claims 1-12 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over WO 99/47573 either individually, or in view of admitted prior art. Claims 13-15 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over WO 99/47573 either individually, or in view of Nakae et al. Claims 1-15 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Cha et al. Newly added claim 16 stands rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over WO 99/47573 either individually, or in view of Applicants' alleged page 4 admission, each taken in view of Applicants' alleged page 2 admission.

The rejection of these claims is respectfully traversed based on newly amended claim 1 with traversing arguments given below and also traversed based on the dependency of claims 2-15 from independent claim 1.

In Claim 1 (Amended), line 2, "a thermoplastic elastomer" has been changed to -- a mixture of a thermoplastic elastomer and a thermoplastic polymer which is not a thermoplastic elastomer--. Support for the amendment can be found in the specification, as originally filed, e.g., on page 8, and in claim 12, as originally filed. No new matter has been added.

As a result of this amendment, claim 12 is cancelled.

Applicants clarify in claim 1 that a base polymer constituting the microporous soundproofing material is a mixture of a thermoplastic elastomer and a thermoplastic polymer which is not a thermoplastic elastomer.

Applicants respectfully submit that Cha does not contain any disclosure to suggest the above claimed blend.

WO '573 discloses on page 2, lines 23-28, that thermoplastic elastomeric resins are homopolymers, copolymers, and blends of polyolefins, polyurethanes, polyamides, polyesters, metallocene plastomers, and the like. In the previous Office Action, the Examiner believed that from this disclosure of WO '573, polyurethanes are thermoplastic elastomers, and a polyolefin is inherently a non-elastomeric thermoplastic polymer, and concluded that WO '573 teaches blends thereof. Applicants submit that polyolefin is, like polyurethane, a thermoplastic elastomer, so that the mixture of polyurethane and polyolefin would not read on Applicants' newly amended claim 1.

WO '573 shows examples of thermoplastic elastomers but does not show examples of thermoplastic polymers other than thermoplastic elastomers. Thus, the disclosure of WO '573 is a mere exemplification, and does not suggest blends in the above-mentioned specific combination. Preferable thermoplastic elastomers actually disclosed in WO '573 are styrenic block copolymers or thermoplastic vulcanizates, and the polymers used in the working examples are "Kraton GLS" (SEBS) and "SANTOPRENE" (blend of PP and EPDM) (page 2, lines 26-28, and page 3, lines 1-5). Therefore, WO '573 does not disclose or teach the recitation of the newly amended claim 1. Furthermore, Applicants respectfully submit that the product of newly

amended claim 1 is a materially different product than the product produced by the processes of WO '573.

As further evidence of patentability over WO'573, Applicants assert that the microporous soundproofing material according to the present invention unexpectedly has high soundproofing properties and excellent flexibility, and is therefore suitable for use in electronic appliances which require excellent shape conformability. Particularly, in applications of electronic appliances, high shape conformability is required so as to maintain close contact with complicated shapes. Further, with the recent trend that circuit boards and the like have very small thicknesses, a problem arises that if a soundproofing material has a large repulsion force, a substrate warps. Therefore, high flexibility is required. The microporous soundproofing material according to the present invention possesses both high soundproofing properties and flexibility, thereby solving those problems.

Although it is believed by the Examiner that the compressive load and the acoustic impedance ratio of soundproofing material to air are either inherent physical properties of the closed cell foam made by process via CO<sub>2</sub> expansion as taught by WO '573 or Cha, or obvious optimizations to one of ordinary skill in the art of acoustic foam materials, these properties are neither inherent nor obvious optimizations. On the contrary, Applicants assert that none of the cited references disclose that foamed articles are used for soundproofing materials, particularly soundproofing materials for use in electronic appliances, and none of the cited references contain any disclosure to teach soundproofing characteristics and also flexibility. Thus, none of the cited

references teach or suggest that soundproofing properties and flexibility are compatible with each other, which is one of the features of the present invention.

Claim 16 stands rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/47573 either individually, or in view of Applicants' page 4 admission, each taken in view of Applicants' page 2 admission. The Examiner notes that WO '573 lacks specific teaching of using the foam as acoustic material. The Examiner believes that Applicants appear to admit that it is well known that expanded materials are used in various parts for the purposes of soundproofing, cushioning, etc. in electronic appliances (Specification, page 2, 2<sup>nd</sup> paragraph). However, read in the context of Applicants' specification, Applicants are not admitting what the Examiner asserts.

On the contrary, the Applicants are discussing the problems presented by the prior art in that expanded materials would not be effective for use as soundproofing, cushioning, and flame-retarding in electronic appliances. For example, using one general flame retardant for expanded materials comprising a combination of aluminum hydroxide and chlorinated polyethylene, the expanded material containing it would generate chlorine ions, which are causative of corrosion of electronic appliances, making the use of expanded materials generally unsuitable for electronic appliances (See Applicants' Specification, last paragraph bridging pages 2-3).

Finally, the Examiner asserts that claim 2, while clarifying the forming steps, is still believed to be within the scope of the admitted prior JP-A-322168. Applicants respectfully argue in traversal that this reference discloses large diameter cells, teaching against what is claimed in the present application. The large diameter cells would not be suitable for use as a

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soundproofing material for electronic appliances from the standpoints of conformability and cushioning properties. And there are no descriptions or suggestions about a soundproofing material in this reference.

Therefore, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 1-10 and 13-16 under 35 U.S.C. § 103 as being unpatentable over the cited references.

*Conclusion*

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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PATENT TRADEMARK OFFICE

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**APPENDIX**  
**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

**Claim 12 is canceled.**

**The claims are amended as follows:**

1. (Twice Amended) A microporous soundproofing material comprising an expanded material formed through the step of impregnating a mixture of a thermoplastic elastomer and a thermoplastic polymer which is not a thermoplastic elastomer with an inert gas under high pressure of from 6 to 100 MPa and then decompressing the impregnated [elastomer] mixture, wherein the expanded material comprises closed cells having an average cell diameter of from 0.1 to 300  $\mu\text{m}$  uniformly distributed throughout the whole interior thereof, wherein the expanded material has a compressive load at 50% compression of 20  $\text{N}/\text{cm}^2$  or lower, and wherein the ratio of characteristic impedance of the microporous soundproofing material to characteristic impedance of air ( $Z_c^{\text{mat}}/Z_c$ ) is from 5 to 50.